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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/043,486 | 01/10/2002 | Franco Motika | POU920000199US1 | 6710 |

7590 07/27/2004

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| EXAMINER |
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TRIMMINGS, JOHN P

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| ART UNIT | PAPER NUMBER |
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2133

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/043,486

Applicant(s)

MOTIKA ET AL.

Examiner

John P Trimmings

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claims 1-8 are presented for examination.

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application.
2. Figure 1 lacks joining lines between each SRL (100) in the drawing (see disclosure page 1 lines 25-26).
3. Figure 2 requires the following:
 - a. Circuit "200" should be designated in the drawing>
 - b. "Sis" and "SRO" are not described in the disclosure.
 - c. Failing bit "402" is not in the disclosure but bit "210" is (page 5 line 12).
4. As per Figure 3; the examiner believes the following references should be changed:
 - a. DI "303" should be "302".
 - b. Cell "308a" should be "308".
5. Figure 4 "404" is described as being either 1's or 0's, but not alternating 1's and 0's. The examiner is not sure, but it appears that the bits designated "404" should be "11111110...00000".
6. As per Figure 5; "Niose" should be "Noise".
7. As per Figure 6; "604" and "608" are not described in the disclosure.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

8. The abstract of the disclosure is objected to because:
 - a. As per Line 5; "varying an operating parameters" should be change to "varying operating parameters".
 - b. The last sentence should be changed from "The process is repeated varying each of the selected operating parameters with the latch position following the stuck-at fault latch is identified." to "The process is repeated varying each of the

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selected operating parameters with the latch position closest to the stuck-at fault latch identified.”

Correction is required. See MPEP § 608.01(b).

9. The disclosure is objected to because of the following informalities:

- a. Page 2, line 6 and 7; “scan chain latch circuits” should be “scan latch chain circuits”.
- b. Page 2, line 8 “104” should be “100”.
- c. Page 2, line 12; “scan chain circuit” should be “scan latch chain circuit”.
- d. Page 2, line 17 and 18 and 20; “scan chain” should be “scan latch chain”.
- e. Page 5, line 13; “circuits” should be “circuit”.
- f. Page 5, line 25; “master latch 308a” should be “master latch 308”.
- g. Page 5, line 25; “SRL 316” should be “SRI 316”.
- h. Page 6, line 8; “412” should be “410”.
- i. Page 6, line 14; “patch 400” should be “latch 400”.
- j. Page 6, line 25; “during the expected” should be “the expected”.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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10. Claims 4 and 8 recites the limitation "the stuck-at fault memory unit" in each claim. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over "A Technique for Fault Diagnosis of Defects in Scan Chains", by Guo et al., in view of IBM Technical Disclosure NN81081677.

As per Claims 1 and 5:

Guo et al. teaches a computer readable program or method for testing combinational and sequential logic circuits where memory (see Abstract); units are coupled together to form shift register latches (see Figure 3), arranged in a shift register scan path with an input and output for testing the logic circuits (see Figure 3), the method or program comprising: shifting data through the scan path to load the shift register latches with a first data pattern representative of a stuck-at fault condition (section 4.1 and Table 1); to trigger a change in state of at least one of the memory units in the shift register scan path by applying ATPG techniques (page 272 column 1, 2nd paragraph, 1st sentence); and determining the memory unit furthest from the shift

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register scan path output that has changed state from its loaded value (page 272 column 1, 2nd paragraph). However, Guo et al. fails to teach causing a permutation of at least one of the following operating parameters: a supply voltage; a reference voltage; a timing pattern temperature and a timing sequence to trigger the said change in state. In the analogous art of NN81081677, such a technique is used to force a change of state in circuits undergoing "schmoo" testing (second paragraph), where "device power supplies" are varied during testing. The last paragraph states an advantage of reduced test time by alternating test techniques to include voltage and frequency variations. And one with ordinary skill in the art at the time of the invention, motivated as suggested, would find it to be an obvious improvement of Guo et al. by combining the power variation teachings of NN81081677 to speed up an overall test time.

As per Claims 2 and 6:

NN81081677 further teaches the method and computer program of claim 1 and 5 including: causing permutations in a plurality of the operating parameters (paragraph 2 states ground reference and power supply). And in view of the motivation previously stated, the claims are rejected.

As per Claims 3 and 7:

Guo et al. further teaches the method and computer program of claim 2 and 6, wherein said analyzing computer code includes shifting code for shifting data out of the scan path after each of the operating parameters is separately permuted (section 4.1). And in view of the motivation previously stated, the claims are rejected.

As per Claims 4 and 8:

Guo et al. further teaches the method and computer program of claim 3, wherein said analyzing computer code and method includes selecting the last bit read out that has changed from its load pattern as being from the shift register latch closest to the stuck-at fault memory unit (page 271 and 272, section 4.2). And in view of the motivation previously stated, the claims are rejected.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John P Trimmings whose telephone number is 703-305-0714. The examiner can normally be reached on Monday through Thursday, 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on 703-305-9595. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


John P Trimmings

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Examiner
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jpt

Guy J. Lamarre
Primary Examiner